Principles of Communication System

Welcome!

Course Outcome

By the end of this course, you should be able to:

- Analyze and differentiate analog modulation and demodulation techniques
- Apply the knowledge of communication theory and techniques in wireless and mobile communication systems
- Analyze different types of digital transmission and digital modulation techniques.
- Use and apply modern computational techniques and tools to measure the parameters for analog and digital communication system
- Shows ability to communicate effectively.

Chapters:

1. Introduction to Communication System (3 Hours)

- 1.1 Basic Communication System
- 1.2 Elements of a Communication System
- 1.3 Time and Frequency Domain
- 1.4 Noise in Communication

2.0 Amplitude Modulation (9 Hours)

- 2.1 Basic Principles of AM : Voltage, Modulation Index and System Efficiency, Bandwidth
- 2.2 AM waveform in time and frequency domain
- 2.3 Power analysis
- 2.4 Types of AM: Double Side Band, Single Side Band and Vestigial Side Band
- 2.5 Suppressed Carrier AM
- 2.6 AM Transmitter
- 2.8 AM Receiver

Chapters:

3.0 Angle Modulation (9 Hours)

- 3.1 Angle Modulation: FM and PM
- 3.2 Basic Principles of FM: Frequency Deviation, Modulation Index, Bessel Function and Power Analysis
- 3.4 Bandwidth: Carson's Rule, Narrowband and Wideband
- 3.6 FM Transmitter
- 3.6 FM Receiver
- 3.7 Noise in FM: Pre – Emphasize and De – Emphasize

4.0 Digital Modulation (12 Hours)

- 4.1 Introduction to Digital Communication System
- 4.2 Pulse Modulation
- 4.3 Pulse Code Modulation: Sampling, Quantizing and Coding
- 4.4 Delta Modulation
- 4.5 Line Coding
- 4.6 Binary Modulation
- 4.7 Multiplexing System: FDM and TDM

Chapters:

5.0 Wireless & Mobile Communication System (9 Hours)

- 5.1 Overview of Wireless Communication Systems
- 5.2 Basic Antenna & Propagation
- 5.3 An Application of Wireless Technology
- 5.5 Basic Mobile Communication System
- 5.6 Future wireless & mobile technologies

Assessments:

ASSESMENT	MARK	No. of assessments
Quizzes	10%	4
Laboratory	10%	2
Assignments	10%	1
Test	30%	2
Final Examination	40%	1
Total	100%	10

REFERENCES

1. Tomasi, (2004), “Electronic Communication System: Fundamental through Advance”, 6th ed. Prentice Hall.
2. Louis E. Frenzel Jr.(2016), “Principles of Electronic Communication Systems”, 4th ed. McGraw Hill
3. Proakis, (2014) “Fundamental of Communication Systems”, 2nd ed, Pearson
4. Couch II, (2013) “Digital and Analog Communication Systems”,8th ed, Prentice Hall.